



## Memorandum

*To: Jennifer LaPoma, EPA Region 2  
Stephanie Vaughn, EPA Region 2  
Elizabeth Franklin, USACE*

*From: Keegan L. Roberts, Ph.D., PE, CDM Smith  
Scott Kirchner, CDM Smith*

*Date: December 21, 2015*

*Subject: Summary of Oversight of SPME Sampler Installation Effort at River Mile 10.9  
December 9–11, 2015  
Lower Passaic River Restoration Project*

On behalf of the United States Environmental Protection Agency (EPA) and the United States Army Corps of Engineers (USACE), Kansas City District, CDM Federal Programs Corporation (CDM Smith) traveled to the River Mile (RM) 10.9 removal area on December 9, 10, and 11, 2015 and provided field technical oversight of the installation of solid-phase microextraction (SPME) samplers at seven of the planned ten locations. Three samplers were installed at each of these seven sample locations, including one each in the armor layer, the top of the reactive layer, and the underlying sediment bed. The duration for installing all three samplers at each location generally ranged from 45 to 60 minutes. The depths of these samplers were:

- A deep sampler, installed in the underlying sediment at approximately 36 inches below the mudline
- A mid-depth sampler, installed in the active layer at approximately 24 inches below the mudline
- A shallow sampler, installed in the armor layer at approximately 16 inches below the mudline

The field activities were conducted by AECOM on behalf of the Cooperating Parties Group (CPG). Prior to the field activities, EPA and the CPG discussed several iterations of sample locations in an attempt to accommodate the CPG's logistical and health and safety concerns. The SPME samplers installed by AECOM are part of the initial performance monitoring event for the RM 10.9 sediment cap. The SPME passive porewater samplers are intended to assess contaminant concentrations in the sediment bed, in the active cap layer, and in the armor stone layer of the RM 10.9 cap.

One set of three passive porewater samplers (Station 0602) was deployed in August 2015 and retrieved two months later, in October 2015. These samplers were to be part of the initial cap monitoring event that was to include SPME sampling at ten selected locations along the length of the RM 10.9 cap. However, due to logistical difficulties, samplers were only installed at Station 0602 during the August mobilization. Once it became clear that SPME samplers could not be installed at the other sampling locations, the CPG decided to leave these three samplers in place. During the December 2015 field effort, the CPG informed EPA oversight (Keegan Roberts) that they would not be resampling Station 0602, as was requested by EPA. The CPG stated that since the planned detection limits were met by the analytical laboratory for the Station 0602 samplers retrieved in October 2015, resampling was not necessary. Furthermore, the CPG stated that they would not be installing samplers at Stations 0609 and 0610, as they could not access these locations without wading through water above mid-calf deep, which would be contrary to their health and safety procedures for this field effort.

A brief summary of the work completed is as follows:

- On December 9, 2015, samplers were deployed at Stations 0606, 0607, and 0608.
- On December 10, 2015, samplers were deployed at Stations 0601, 0603, 0604, and 0605.
- On December 11, 2015, a duplicate set of samplers was deployed at Station 0607.
- Station 0602 was not resampled, and Stations 0609 and 0610 could not be accessed.

Both the proposed and actual SPME sample locations for this effort are presented in Figure 1. Photographs of field activities are presented in Attachment 1. A copy of the field logbook notes is provided in Attachment 2.

## **Summary of December 9, 2015 Field Activities**

### **Personnel in Attendance**

Keegan Roberts – CDM Smith

Yeqing Liu – CDM Smith

Helen Jones – AECOM

Rick Purdy – AECOM

Jennifer Reed – AECOM

Joel Meunier – AECOM

Claire Murphy-Higgin – AECOM

Patrick Felione – AECOM

Ben Bertolotti – AECOM (left prior to completion of field activities)

Prior to the start of the day's field activities, AECOM raised several safety considerations for the field effort during the tailgate safety briefing. The primary safety considerations pertaining to access to sample locations included:

- In-water work could only be performed if the combined air and water temperatures exceeded 100 degrees Fahrenheit. K. Roberts emailed Doug Simmons of AECOM to determine which U.S. Geological Survey water station on the Passaic River was used to determine water temperature. However, a response to this email inquiry was not received.
- Work could only be performed at locations where the combined sediment and water level would not exceed mid-calf on the field personnel.

These safety considerations were echoed by Ben Bertolotti, an AECOM health and safety manager who was on site. While observing the RM 10.9 cap from shore following this safety briefing, Helen Jones of AECOM noted that Stations 0609 and 0610 would be difficult to reach given the AECOM site safety considerations.

AECOM organized their six field personnel (excluding B. Bertolotti) into three teams: one 2-person onshore sampler preparation team, and two 2-person sampler deployment teams. Three samplers were deployed at each sample station: one in the armor layer, one in the top of the reactive layer, and one in the underlying sediment bed. All sampler preparation and deployment activities were to be performed in accordance with the QAPP (AECOM 2015).

Sample locations 0606, 0607, and 0608 were completed on December 9, 2015. The field team was able to install samplers at these locations as the water level remained below these locations until installation was complete.

AECOM field personnel noted that armor stone was not encountered during the sampler installation at Stations 0606 and 0607. Per AECOM, there was armor stone in the general vicinity of these stations, but the probes and installation rods did not encounter any stone at the actual sampler deployment locations. This lack of armor stone should be kept in consideration during the evaluation of data from these two locations.

## **Summary of December 10, 2015 Field Activities**

### **Personnel in Attendance**

Keegan Roberts – CDM Smith

Yeqing Liu – CDM Smith

Helen Jones – AECOM

Rick Purdy – AECOM

Jennifer Reed – AECOM

Joel Meunier – AECOM

Claire Murphy-Higgin – AECOM

Patrick Felione – AECOM

Channing Hawkins – AECOM

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AECOM reiterated their site safety considerations during the daily tailgate safety briefing, and sampler installations progressed in the same manner as the previous day. AECOM installed the series of three samplers at Stations 0601, 0603, 0604, and 0605. The location for Station 0604 had to be moved approximately five meters toward the shore due to the thickness of the sediments above the cap at the planned installation location and AECOM's health and safety considerations, which prevented field personnel from working in sediments above mid-calf deep.

Rick Purdy of AECOM informed K. Roberts that the field team would not be resampling Station 0602, as requested by EPA. R. Purdy stated that the CPG had received the analytical results from the contract laboratory, and that the contract laboratory was able to meet the contaminant detection limits specified in the QAPP (AECOM 2015). R. Purdy further stated that the data from Station 0602 was still undergoing validation and, as such, had not yet been released.

AECOM attempted to access Stations 0609 and 0610, north of the boat launch, on foot from the shoreline south of the boat launch. Currently, Stations 0609 and 0610 cannot be accessed from the shore immediately adjacent to these sample locations due to thick vegetation and fencing along the shoreline. While attempting to access the shoreline north of the boat launch, AECOM field personnel encountered water depths of approximately two feet near the bulkhead. Due to AECOM's health and safety consideration of not entering any area where the combined sediment and water depth extended above mid-calf on the field personnel, AECOM could not access Stations 0609 and 0610.

K. Roberts informed the AECOM field team that if they could not access Stations 0609 and 0610, there were no additional sample locations south of the boat launch and within wadeable distance from shore that were of interest to EPA at this time and that could be accessed given AECOM's health and safety considerations. R. Purdy mentioned the possibility of renting a boat to access the shoreline near Stations 0609 and 0610, but did not commit to doing so.

## **Summary of December 11, 2015 Field Activities**

### **Personnel in Attendance**

Keegan Roberts – CDM Smith

Rick Purdy – AECOM

Jennifer Reed – AECOM

Joel Meunier – AECOM

Claire Murphy-Higgin – AECOM

Patrick Felione – AECOM

Channing Hawkins – AECOM

AECOM reiterated their site safety considerations during the daily tailgate safety briefing. A duplicate set of samplers was installed at Station 0607 per the QAPP (AECOM 2015) in the same manner as the previous two days. This location was chosen by AECOM as it is one of the closest stations to shore. K. Roberts inquired of R. Purdy why a boat was not being used to access Stations 0609 and 0610. R. Purdy stated that he did not know the specific reason why a boat was not being used. K. Roberts also inquired

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why over the course of the field effort the portions of the samplers above the sediment bed were not being cut to reduce the length of sampler sticking into the water column, which could potentially snag debris or ice floating down the Passaic River. R. Purdy stated that the samplers were not cut to shorter lengths given the time that would be required to cut the samplers, and the time during which the tide would be low enough to allow the field team to work at the sample stations.

Once again, the AECOM field team could not access Stations 0609 and 0610 given the depth of the water (approximately two feet) overlying the sediment near the boat launch bulkhead.

Table 1 presents the status of the ten sample stations that were ultimately proposed for this effort.

## **References**

AECOM. 2015. Quality Assurance Project Plan, Lower Passaic River Restoration Project, River Mile 10.9 Post-Construction Monitoring – Draft. Rev. 1. December 4.

**Table 1: Status of Proposed Sample Stations**

Station	Status
0601	Installation completed 12/10/2015. Sample location same as in final station location proposal.
0602	Station not resampled, despite request by EPA. Samplers deployed in August 2015 and retrieved in October 2015.
0603	Installation completed 12/10/2015. Sample location same as in final station location proposal.
0604	Installation completed 12/10/2015. Sample location five meters closer to shore than was directed in final station location proposal. Relocation due to AECOM field team health and safety concerns regarding access to the proposed location.
0605	Installation completed 12/10/2015. Sample location same as in final station location proposal.
0606	Installation completed 12/9/2015. Sample location same as in final station location proposal.
0607	Installation completed 12/9/2015. Sample location same as in final station location proposal.
0608	Installation completed 12/9/2015. Sample location same as in final station location proposal.
0609	Samplers not installed due to AECOM field team health and safety concerns regarding access to the proposed location.
0610	Samplers not installed due to AECOM field team health and safety concerns regarding access to the proposed location.

# Attachment 1

## Photographs of Field Activities



Photograph 1: Locating sample stations via GPS

12/9/2015



Photograph 2: Preparing to install samplers at Station 0608

12/9/2015



Photograph 3: Installing samplers at Station 0606

12/9/2015



Photograph 4: Locating Station 0603

12/10/2015



Photograph 5: Attempting to access Stations 0609 and 0610

12/10/2015



Photograph 6: Fence and undergrowth preventing access from shore to Stations 0609 and 0610

12/11/2015

## Attachment 2

### Field Logbook Notes

Date:	12/9/2015	Author:	K. ROBERTS
Project/Client:	PASSAIC - RM10.9 / USEPA		
Weather:	AM - 45°F; Overcast		
	PM -		
Field Team:	K. ROBERTS IS NOTE TAKER		
0945	K. ROBERTS ARRIVES ON SITE.		
	NO OTHER PARTIES HERE.		
1030	H. JONES, RICK PERRY,		
	TENNISER, REED OF AECOM		
Work Plan:	ARRIVE, JOE MEUNIER, CLARE		
Equipment:	MUPPIT - (H. J. P. PORTER FEELSTONE		
	MOBILE (AECOM) - LITING - (H. J. P. PORTER FEELSTONE		
1120	AECOM DEERS GPS MARKS ATUAL		
PPE:	SITING TO INSPECT LOCATIONS.		
1150	H. JONES LEADS H. J. P. PORTER, SAFETY		
	REVIEWING @ REGRADE WITH LITING SITE		
	ON CAP @ DAWN GO TO SEDIMENT		
	WATER ABOVE MED-LAKE, RECOUNT		
	H. J. P. PORTER SAFETY WITH BE HERE TO		
	INSPECT FROM AECOM. PLAN TO		
	SITING INSITU AROUND 1.		
1155	BEU ZERTON (AECOM)		
	ARRIVES. AECOM HAS 11'S RULE		
	THAT THE AIR + WATER TEMP IS		
	LESS THAN 100°F, THEY CANNOT		
	WORK IN WATER		

Date:	12/9/2015	Author:	K. ROBERTS
Project/Client:	PASSAIC - RM10.9 / USEPA		
1220	DO WATER TOUR OF SITE		
	WITH AECOM		
1230	H. JONES STATES THAT 0609		
	AND 0610 WILL BE DEEROUT		
	TO GET TO		
1250	AECOM SETS UP ON SHORE		
	ADJACENT TO 0607 AND 0608		
	DOWNS WADERS; DPF		
1330	SAMPLED PIER ON TUBES;		
	SAMPLE LOCATION ON TUBES		
	WATER TEMP; AIR TEMP FROM		
	USE WESTSIDE PIR PERRY		
1345	MOBILIZE TO SPAN 0608		
	WATER LINE RIGHT AT SAMPLE		
	LOCATION.		
1402	0608 TUBES BEGINS IN		
	ARMOR WATER		
1415	0608 TUBES IN REACTIVE		
	UNDER BEGINS. NONE; 0606		
	TUBES BEGINS SOME TIME		
	BEFORE NOW		
1430	PER PERRY, BEEROUTT LEFT		
	SITE		

Date:	12/9/2015	Author:	K. ROBERTS
Project/Client:	Passaic-2M10.9 / USEPA	Participating:	Passaic-2M10.9 / USEPA
Weather:	1500 PER	Temperature:	44° F
Field Team:	PH - NO AECOM, MYER AT OG06, AECOM USING AN EMPTY SAMPLER		
Activity:	TO BUILD INSTALLED HEAVY SAMPLER IN PLACE WITHIN OUTER CIRCLES IS REMOVED		
Work Plan:	1503 OG08 SAMPLE INSTALLED COMPLETE, TEAM MOVES TO OG07.		
Equipment:	J. MEUNIER DOES NOT FEE		
H&S Issues:	ARMED STONE AT THIS LOCATION WITHIN PROBLEMS.		
Notes:	1527 PUDY CHUS IN TEAM ROOM OG06 DUE TO RISING WATER LEVEL, AN 3 SAMPLES IN AT THIS LOCATION		
	1540 SAMPLES AT OG07 COMPLETE, AECOM COMPLETES INSTALLED IN W/IN OF WATER		
	1546 K. ROBERTS LEAVES SITE END OF DAY		
	Keegan ZH		
	12/19/2015		

Date:	12/10/2015	Author:	K. ROBERTS
Project/Client:	Passaic-2M10.9 / USEPA		
Field Team:	1140 K. ROBERTS ARRIVES ON SITE		
Activity:	NO ONE ELSE ON SITE. WEATHER IS SUNNY AND 57°F.		
Work Plan:	1155 NOTICE AECOM TEAM ON SITE BY LOCATIONS OG04 AND OG02.05 SAME AECOM PERSONNEL AS YESTERDAY, EXPECT LEAVING WITHIN (AECOM)		
Equipment:	1200 AECOM BEGINS SAMPLE PREP		
H&S Issues:	1206 AECOM CONDUCTS SAFETY BRIEFING (PUDY). REITERATED NO WORKING IN SEDIMENTS ABOVE MID-DAY.		
Notes:	1230 Accompany AECOM ON CAP TO MARK LOCATIONS		
	1233 OG01 LOCATION IS 4" FROM CURRENT WATER LINE. PER AECOM, "SHOULD BE DOUBLE" AECOM,		
	1239 AECOM MARKS LOCATION OG01		
	1243 AECOM MARKS PROXIMITY OF OG02. APPROX 2" TOWARDS CHANNEL FROM WHERE THEY STOP WADING IN		

Date:	12/10/2015	Author:	K. ROBERTS
Project/Client:	PASSATE - RM10.9 / USEPA		
Weather:	AM-1250	AEDOM MARKS LOCATION	
Field Team:	PM-1300	0603 BY WADING IN, AEDOM LOCATING 0604, SOFT SEDIMENTS ABOVE MUD-CLAY ON C. MURPHY SOME INSTALLATION TEAMS SET UP ON LOCATIONS	
Activity:	1305	0603 & 0604, 0604 LOCATION 5-M FROM WHERE STAKE PUT, C. MURPHY UP TO CAVES IN SEDIMENT, PURDY SAYS MAY NOT BE ABLE TO ACCESS THIS LOCATION.	
Work Plan:			
Equipment:			
Issues:			
Notes:			
1406	0601 COMPLETED FACILITER, SITE AT 0603.		
1416	0603 SAMPLER INSTALLATION COMPLETE		
1430	INSPECT ACCESS TO 0609 & 0610 BY BOAT LAUNCH, WATER OF UNKNOWN DEPTH OVER SEDIMENT, SET UP ON 0604, BUT 5-M INWARD DUE TO SEDIMENT DEPTH		

Date:	12/10/2015	Author:	K. ROBERTS
Project/Client:	PASSATE - RM10.9 / USEPA		
1443	C. MURPHY MEASURED ACCESS POINT FOR REACHING 0609 & 0610. WATER DEPTH APPROXIMATELY 2 FT, PURDY SAYS UNLESS WATER DROPS, WILL NOT BE ABLE TO ACCESS THESE TWO POINTS. K. ROBERTS ADVISES PURDY THAT THERE ARE NO ADDITIONAL POINTS SOUTH OF BOAT LAUNCH THAT CAN BE REACHED BY WADING THROUGH ONE FEET SEDIMENT THAT ARE OF INTEREST. TEAM SETS UP ON 0605. NOTE: (LIVING - CLARK LTV OF COM KEEPING SEPARATE LOGBOOK FOR 12/9 AND 12/10 ACTIVITIES. PER PURDY, THEY WERE NOT BE RESAMPLING 0602 DUE TO FACT THAT RECEIVED RESULTS FROM LAB AND DETECTION LIMITS WERE MET COMPLETE INSTALLATION AT 0605		

Date:	12/10/15	Author:	K. Roberts
Project/Client:	Passare - RM10.9/USEPA		
Weather:	AM	1600	LEAVE SITE
	PM		
Field Team:	END OF DAY		
Activity:			
Work Plan:			
Equipment:			
HRS Issues:			
PPE:			

11/10/15  
11/12/15

Date:	12/11/2015	Author:	K. Roberts
Project/Client:	Passare - RM10.9/USEPA		
1240	K. Roberts arrives on site. AECOM team needs same as yesterday except H. Jones is not here.		
1245	Purdy conducts safety briefing. Picked duplicate location as it is closest to shore and east to install. Hit armor stone locations yesterday. Duplicate is at 0607.		
1300	Purdy, boat will not be used for reasons that he does not know.		
1315	AECOM sets up on duplicate station at 0607.		
	NOTE: A significant portion of the heavy sampler is sticking <del>the</del> <sup>up</sup> UP ABOVE THE TOP OF SEDIMENTS AT ALMOST ALL LOCATIONS. May have debris or ice. Per Purdy, were not at lower due to time considerations.		

[illegible]

Passaic Rm 10.9 USEPA 12/9/15

11:05 Arrived onsite

11:30 Walking along shore with GPS to confirm sampling locations

Keegan Roberts has personnel list - see other logbook

Weather 45°F Overcast  
49°F Water Temp (AECOM measurement)

11:50 Safety meeting with AECOM  
Two teams for 601 and 602  
Low tide at 2:15. Walking stick req.  
Potential start at 1 pm  
Staying in sediment not going into water due to air + water temp less than 100°F combined.

11:55 Ben Bertolotti (AECOM) arrives  
H&S officer

12:20 Begin sample location recon again  
Evaluating 609 and 610 locations

12:36 Flagging 607 location - seems sampleable - location appears not in water.

12:45 Moving cars w/ equipment closer to sample locations. Field people get dressed to prepare for sampling 607 and 608

46 12/10/15  
Passaic Rm 10.9 USEPA 12/11/15

Sample guides <sup>status yellow</sup> ~~orange~~ <sup>orange</sup> ~~red~~  
Green - deep <sup>approximately 7-10 in</sup> ~~not below green line~~  
underlying sediment <sup>above 15-18 in</sup>

13:04 - Sample location 607 determined marked w/ wooden stick/stake

13:07 sample location 608 determined marked w/ wooden stake

13:47 Probing sediment around sample loc 608 (right at edge of water)

14:02 - Begin slide hammering at 608 for sampler installation

14:05 - First sample dropped (shallow)  
~~through~~ in armor layer + disk dropped

14:15 - Slide Hammer for second location <sup>by 608</sup>  
gradually over drive to deepest depth (underlying sediment) ✓/L

14:25 - 2nd sampler dropped (deepest) 12/9/15  
Removal of slide hammer (sharp sand found upon dropping)

14:27 - Insertion of 2nd sampler (deep)  
top is lower than sediment surface  
disk dropped ✓/L

14:40 - Insertion of 3rd sampler 12/11/15  
sampler had come up w/ using

14:45 - shaped metal rod brought for assistance by Rick

Passaic RM 10.9 USEPA 12/9/15

14 7/11/15  
12:50 Slide hammering w/ one foot  
14 11/11/15 Submerged in water  
12:53 3rd sampler installed (mid depth)  
12:58 Left sampling location 608  
14 14:59 Moved to 607 sampling location  
15:00 Begin probing at location 607  
15:12 Joel returns to 608 sample location  
to find lost item - piece of  
slide hammer - did not find.  
15:19 Brings extra piece of slide  
hammer from car  
15:20 Begin slide hammering VL 12/9/15  
15:22 1st sampler inserted (shallowest)  
capped & lubed red tape  
15:29 slide hammer at 2nd location  
15:31 2nd sampler inserted (not below  
geofabric - mid depth)  
15:35 Slide hammer at 3rd location  
Joel cut around mid calf into  
water VL 12/9/15 ankles  
15:37 3rd sampler installed (in  
underlying sediment - lowest depth)  
coded green  
15:40 Finish installation. Begin packing up  
15:46 Y Liu leaves site  
12/9/15

Passaic USEPA 12/10/15

12:30 Yeging Lin arrives onsite  
12:45 Started to field team's location  
weather and joined VL 12/10/15  
61°F Keegan has Roberts has  
Sunny persimmon location  
Currently field team is preparing  
equipment. Claire is surveying GPS  
Air + water temp above 100°F so  
okay to go into water but still  
not above mid calf (sediment + water  
combined). Rick says AECOM has  
been out prepping and waiting for  
the tide since 10AM.  
13:00 First field team reaches 602  
13:05 Redirected to 601 (602 will  
be sampled last today)  
13:10 Scooping out sampling location - probing  
Field team is mid calf to just  
below the knee in water  
13:12 Field team taking selfies  
13:16 Slide Hammer at sample location  
13:20 First sampler inserted casing removed  
Field team is ankles to mid calf in  
water. 1st sampler location @  
shallow depth (armor layer) marked w/ red tape

## Passaic

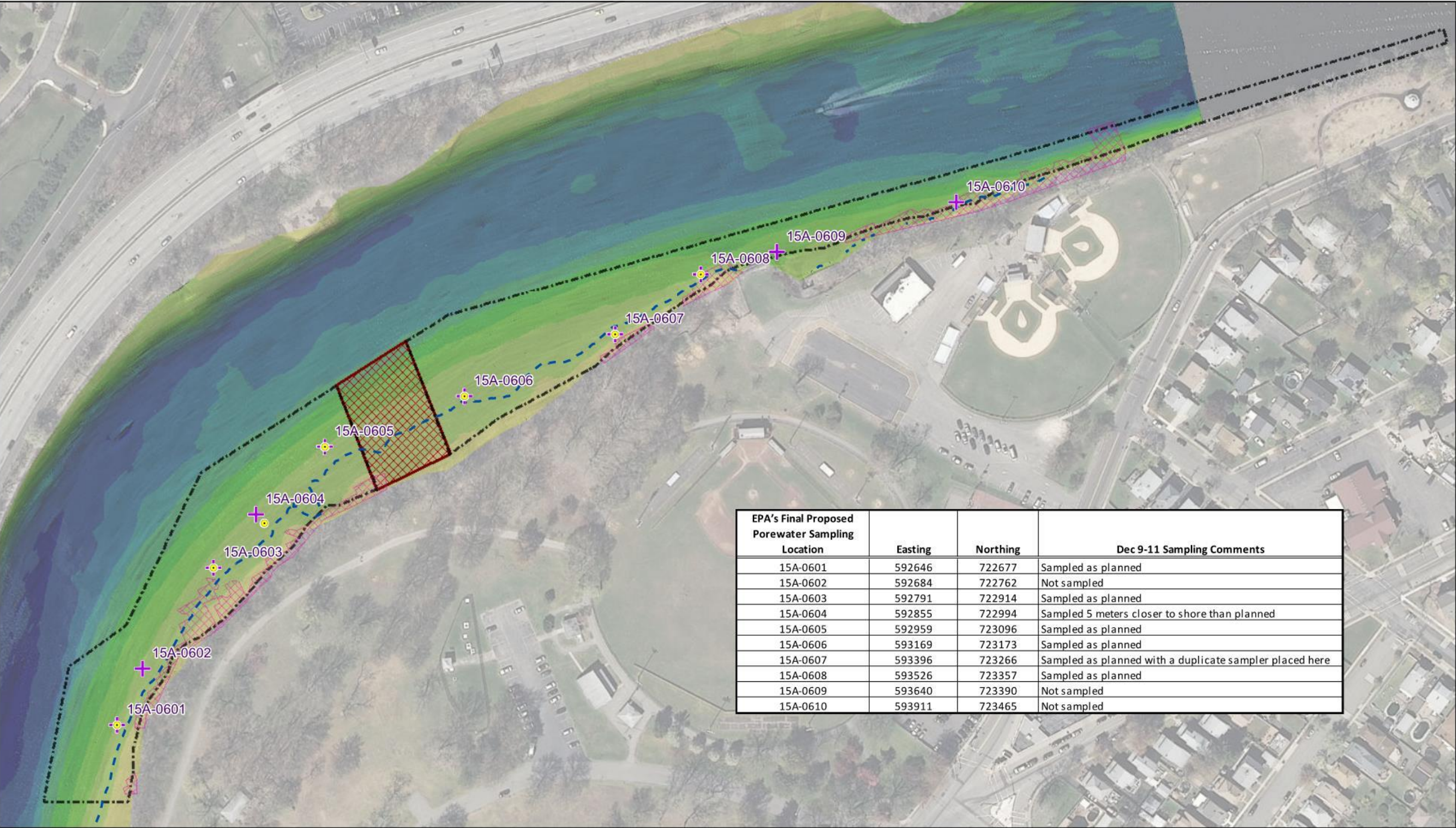
- 1326 Scoping out 2nd sampler location accidentally probed past geotextile layer. so deepest sampler will be installed next.
- 1331 Probing stick removed. Slide hammer inserted.
- 1335 2nd sampler installed (deepest depth - underlying sediment) casing removed.
- 1340 Probing for 3rd sampling location.
- 1341 Slide hammer retrieved from clean storage area at the base of riprap next to sediment ~20-25 ft away. Samplers are also kept here and retrieved before each installation.
- 1345 Claire comes to confirm GPS coordinates. Field team begins slide hammering. <sup>14:12/10/15</sup>
- 1347 3rd sampler retrieved from storage area.
- 1349 3rd sampler installed. casing removed.
- 1351 3rd sample (labeled yellow (mid depth) just below geotextile).
- 1355 depth measurements taken.
- 1359 Rinsed off equipment & ~~to~~ left 601 <sup>14:14/10/15</sup>

12/10/15

- 1405 3 <sup>pedestrians</sup> ~~old ladies~~ passing by ask Jen about what is happening. Jen answers back = doing some sampling.
- 1415 Rick & Joel evaluated 609 and 610 at boat dock <sup>14:12/10/15</sup> at viewing point near boat dock Rick is not comfortable with <sup>in current depth</sup> elevations.
- 1435 A pedestrian passing asks - Rick responds: doing river sediment sampling. EPA & others are involved.
- 1436 Field team preps to sample at ~~608~~ <sup>609</sup> ~~14:45/10/15 609 location. Rick indicates this current location is 5 meters inland of original location.~~
- 1445 2nd field team arrives at 605 location.
- 1447 First field team (at 604) probing for first sample location.
- 1452 Field personnel returns to retrieve core sampler.
- 1452 Slide hammer at 605.
- 1456 Still probing at 604.
- 1456 Slide hammer at 604.
- 1455 shallow sampler installed (1st sampler - armor layer - reddish red). Field team at 604 just below knees in sediment. Taking measurements.

~~12/10/15~~ Passaic USEPA 12/10/15  
~~1502~~ Claire comes to double check  
~~1502~~ GPS coordinates  
 1505 Slide hammering at 2nd sampling  
 location  
 1507 Second Sampler installed (middle  
 depth) inst below geotextile fabric (redd  
 yellow)  
 1512 Slide hammering at 3rd sampling  
 location  
 1515 3rd sampler installed (deepest depth)  
 underlying sediment (coded green)  
 1521 Joel returns to equipment van to  
 bring back something  
 duplicates sampling (6 total samplers)  
 planned at 604  
 1529 Field team currently waiting  
 1531 Joel returns to 604 sampling location  
 Indicates duplicate sampling plans  
 will be aborted due to rising ~~water~~  
 water level  
~~1533~~ Team begins packing up equipment  
 1533 from sampling location 604  
 1537 Field team evaluates 604 location  
 1549 Field team evaluates 605 location  
 1551 VLin leaves site

W2W 12/10/15



EPA's Final Proposed Porewater Sampling Location	Easting	Northing	Dec 9-11 Sampling Comments
15A-0601	592646	722677	Sampled as planned
15A-0602	592684	722762	Not sampled
15A-0603	592791	722914	Sampled as planned
15A-0604	592855	722994	Sampled 5 meters closer to shore than planned
15A-0605	592959	723096	Sampled as planned
15A-0606	593169	723173	Sampled as planned
15A-0607	593396	723266	Sampled as planned with a duplicate sampler placed here
15A-0608	593526	723357	Sampled as planned
15A-0609	593640	723390	Not sampled
15A-0610	593911	723465	Not sampled

- 12/9-11/2015 Porewater Sampling Location
- EPA's Final Proposed Porewater Sampling Location
- Approximate Low Water Line, Dec 9-11 at a tide elevation of -0.6 ft relative to MLLW
- River Mile 10.9 Dredged Area
- No Dredge Zone
- Hard Pan

**Elevation**

0.08 - 2.29	-10.97 - -8.76
-2.13 - 0.08	-13.18 - -10.97
-4.34 - -2.13	-15.39 - -13.18
-6.55 - -4.34	-17.6 - -15.39
-8.76 - -6.55	

Bathymetry survey by GBA, June 2015

**December 2015 Passaic River Mile 10.9 Porewater Sampling Locations**

0 100 200 Feet

**DRAFT: NOT FOR DISTRIBUTION**

Note: Low tides will occur Nov 11-14 (0-0.1 ft relative to MLLW) and Dec 10-13 (-0.2 to -0.6 ft relative to MLLW)  
Tide predictions for station located upriver at 40.8483° N, 74.1200° W (Subject to Attorney Client, Work Product, and/or Deliberative Process Privileges, and the Joint Prosecution and Confidentiality Agreement; Not for Public Release; FOIA/OPRA Exempt)